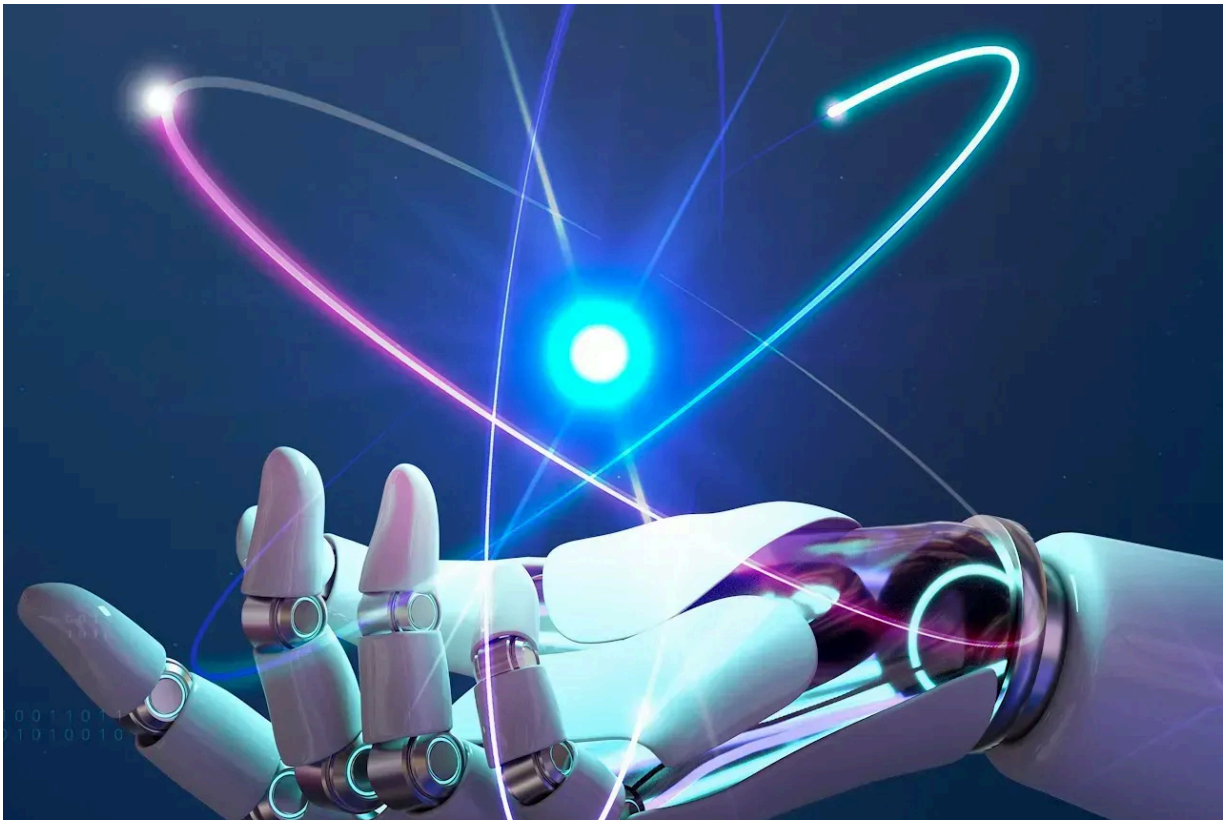
JENKS SCIENCE AND TECH TALKS

Science and Technology at the Jenks - Restarting power plants plus the blood-brain barrier

SPECIAL TO THE NEWS

February 5, 2025 . 12:01 PM — 3 min read



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- The Blood-Brain Barrier

By Ron Latanision, John Brown, and Walter Hubbard

Emeritus Professor Ron Ballinger of MIT's Department of Nuclear Science & Engineering spoke in January about recent interest on the part of Big Tech in *Restarting Decommissioned Nuclear Power Plants*.

The growing demand for electricity stimulated by EVs, data-intensive cryptocurrencies (especially Bitcoin), and data mining (used in data-intensive LLM-based artificial intelligence) has led, for example, to consideration by Microsoft to restart the decommissioned Three Mile Island nuclear power plant.

Ballinger spoke about the technical hurdles to doing this and the evolving response of the Nuclear Regulatory Commission.

Ballinger is a Professor Emeritus of Nuclear Science and Engineering and Materials Science and Engineering at Massachusetts Institute of Technology. He served for eight years in the nuclear navy before attending college.

He received his B.S. in Mechanical Engineering from Worcester Polytechnic Institute in 1975, his S.M. in Nuclear Engineering in 1977 and in Materials Science and Engineering in 1978 and his Sc.D. in Nuclear Materials Engineering in 1982 from MIT. After receiving his Sc.D., he joined the faculty at MIT.

Ballinger was appointed to the U.S. Nuclear Waste Technical Review Board by President Joseph Biden on Oct. 25, 2022.

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He has served on several U.S. Department of Energy (DOE) comm
dealing with the stabilization, processing and disposition of metallic

uranium fuel from the production reactors as well as from research reactors including teams to evaluate options for the Hanford, Savannah River, and Idaho National Engineering Laboratory sites.

He has been a member of several DOE committees to evaluate advanced reactor options and materials for these options.

These committees include: (1) Independent Technical Review Group: Design Features and Technology Uncertainties for the Next Generation Nuclear Plant, (2) Power Conversion Unit Study Committee, and (3) the Idaho National Laboratory Materials Review Board.

Ballinger was a member of the Independent Performance Assessment Review Panel that evaluated the total system performance assessment for the license application for the Yucca Mountain waste repository.

Ballinger was appointed to the NRC Advisory Committee on Reactor Safeguards in 2013.

The Blood-Brain Barrier

And on Jan. 24, Johns Hopkins University Professor Peter Searson spoke on the blood-brain barrier: Its character and function in humans.

The blood-brain barrier is a 600 km network of blood vessels that supplies nutrients to the brain while at the same time providing protection from anything in circulation that could compromise normal brain function.

He described how the blood-brain barrier performs these functions and then discussed the role of the blood-brain barrier in health and disease.

Finally, he demonstrated an *in vitro* tissue-engineering model of the blood-brain barrier he has constructed that is being used in research to

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understanding of brain disease and to help develop strategies for brain rejuvenation and repair.

This innovative work may eventually lead to therapies for Alzheimer's dementia and other brain disorders in an aging population.

Searson received his PhD from the University of Manchester in England in 1982 and then was a post-doctoral associate in Ron Latanision's lab at MIT. Since 1990 he has been at Johns Hopkins University.

He was co-founder and director of the Johns Hopkins Institute for Nanobiotechnology from 2006 to 2016, and holds appointments in the Department of Materials Science and Engineering, the Department of Biomedical Engineering, the Department of Physics and Astronomy, and the Department of Oncology.

He is the Joseph R. and Lynne C. Reynolds Professor of Engineering at Hopkins.

UPCOMING WILSON FORUM PRESENTATIONS:

Feb. 14: Professor Srinivasan Chandrasekar, Purdue University will speak on *Prince Rupert's Drops: 400- year-old Mystery Revealed.* Prince Rupert's Drops are small glass structures resembling tadpoles that can withstand the blows of a hammer and yet burst into powdery dust if their threadlike tails break.

An international research team from Purdue University, the University of Cambridge in the UK and Tallinn University of Technology in Estonia has pinpointed the source of the bizarre shatter-resistant behavior.

Feb. 28: Dr. Albert Moussa, BlazeTech Corporation, addresses *Hy* *an Energy Source*. Hydrogen could serve as an energy source for our planet,

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and there is much international effort underway to pursue this potential. Our speaker will discuss some of the challenges.

All Wilson Science & Technology Forum presentations are recorded and can be streamed free on demand at the Wilson Forum's website.

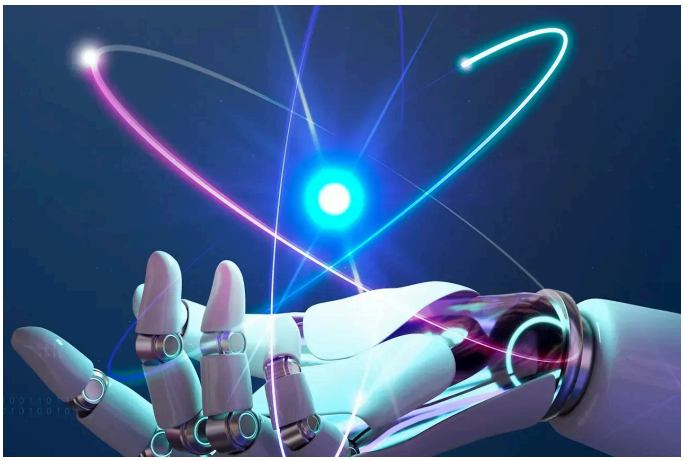
WinCAM broadcasts recordings of Forum presentations at 3 p.m. on Mondays and Fridays. For the schedule, go to https://wincam.org/schedule/education/ and search for "Wilson."

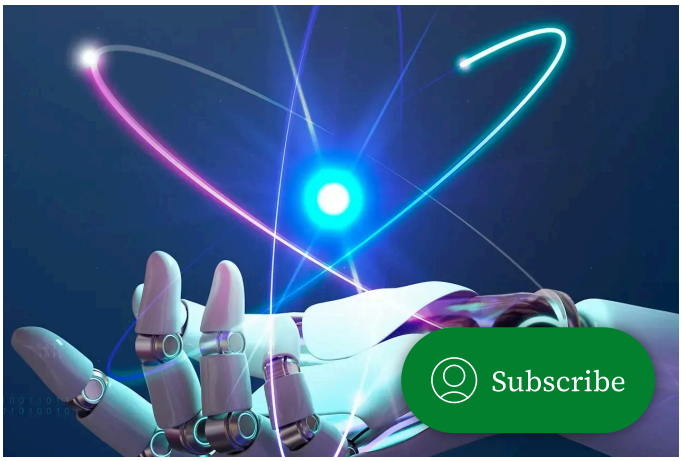
The Wilson Forum's meetings are via Zoom, at 10:30 a.m. on the second and fourth Fridays of each month, with the exception of July and August.

To learn of upcoming Forum speakers, you can check the Jenks Center's website https://www.jenkscenter.org/ (events > daytime > Wilson Forum).

Better yet, you can receive advance notification of upcoming talks by emailing a request to be added to the Forum's roster to rlatanision@alum.mit.edu.

Related





JENKS SCIENCE AND TECH TALKS

Jenks Science and Tech Talks - on truth and the purposes of government

By Ron Latanision and John Brown On November 14, author Joe Simonetta spoke about the truth, which is under siege in our contemporary world; and on November 28th Wilson Forum Historian Vincent Dixon spoke about a central debate of our time, the purposes and evolution of government. By Ron Latanision

SPECIAL TO THE NEWS
December 11, 2025

JENKS SCIENCE AND TECH TALKS

Jenks Science & Tech Talks discusses AI and spent nuclear waste

The Wilson Science & Technology Forum at The Jenks Center in Winchester By Ron Latanision and John Brown Tales from the AI Frontier On October 10, Dr. Eddie Robins spoke about the human-machine interface in the expanding presence of artificial intelligence (AI) in our lives. The rapidity with which AI

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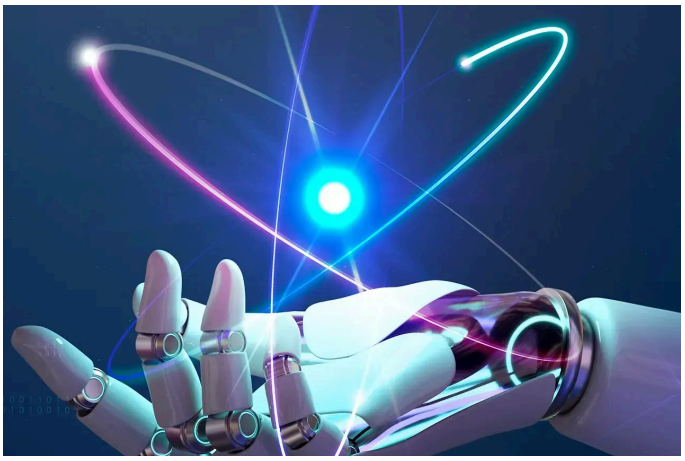
November 15, 2025



JENKS SCIENCE AND TECH TALKS

Jenks Science and Technology Forum discusses managing risks in emerging tech, plus quantum computers

By Ron Latanisian In September, Michael Garjian spoke about An Alternative to Corporate Capitalism in Managing the Socio-economic Risks of Emerging Technologies and Jagadeesh Moodera spoke about The Evolution of Quantum Computers An Alternative to Corporate Capitalism The introduction of any new technology into the marketplace and into our social

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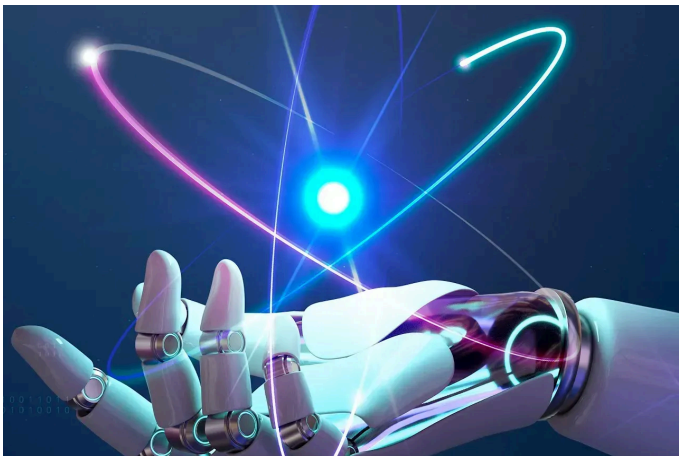
October 5, 2025



JENKS SCIENCE AND TECH TALKS

Science and Technology at the Jenks - AI talk and Superconductors

By Ron Latanision, John Brown, and Walter Hubbard In June, Marv Goldschmitt added the perspective of a technological philosopher to The Artificial Intelligence Revolution and Professor Amit Goyal spoke about High Temperature Superconductors Artificial Intelligence - Wrap Up for the 2024-2025 Forum Season On June 27, our season wrap-up, The

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July 23, 2025

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Latest

EVENTS

Celebrate Women's History Month with Girls Leading Change

The following was submitted by the Network for Social Justice: To mark Women's History Month and International Women's Day in 2026, the Network for Social Justice is collaborating with club leaders from Winchester High School and members of the Community Health team from La Colaborativa in Chelsea and

March 4, 2026

NEWS

Winchester School Committee candidates bring contrasting backgrounds to Thursday forum

Two candidates for Winchester's School Committee will face voters at a forum as the district navigates a new literacy curriculum, budget pressures and questions about student mental health. Heather von Mering and John Bellaire are competing for an open seat on the School Committee, which oversees a budget von

WILL DOWD | STAFF WRITER

March 4, 2026

FEATURES

'Chicago: Teen Edition' dances onto the Winchester High School

EVENTS

Ripley Chapel in Win presents 'Syldason: You Are

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stage

By Talia Ho | Correspondent Fame. Fortune. And all that jazz. This spring, Winchester High School presents “Chicago: Teen Edition,” a bold musical that explores celebrity culture, media manipulation, and the cost of ambition. This iconic production is set in the 1920s. Performances will take place on March 13 and 14

SPECIAL TO THE NEWS
March 4, 2026

Welcome Here’

The following was submitted by the Ripley Chapel at First Congregational Church: On Friday, March 13, beginning at 7:30 p.m., live in-person and live streamed from the stunning Ripley Chapel at First Congregational Church, Winchester, 21 Church St., join in with Syldason, a duo concert featuring Sylvie Zakarian,

March 4, 2026

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